

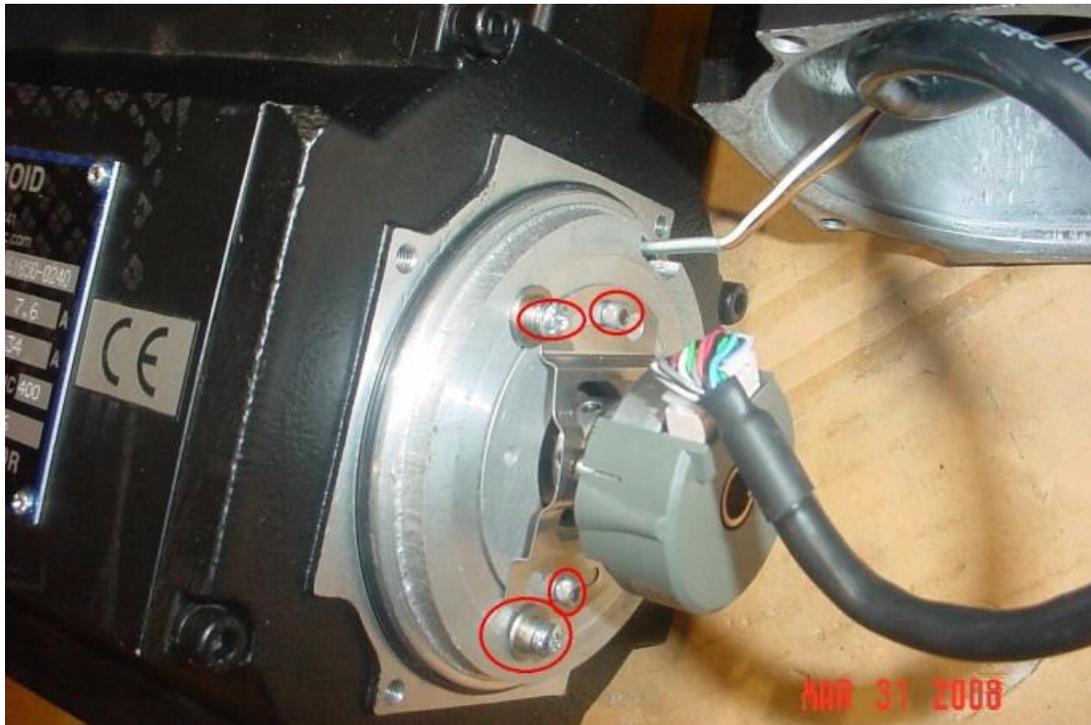
Encoder alignment on Centroid AC brushless motors

Centroid AC brushless motor control relies on knowing the motor position in order to stay synchronized while driving the motor. Before the motor is mounted on a machine the encoder index pulse is aligned with a position determined by the drive. The drive applies sinusoidal voltages to the three-phase input to rotate the motor shaft to a starting position. Depending on the number of poles of the motor there can be 2, 3 or 4 positions in a full rotation of the shaft. The index pulse can be aligned with any one of these.

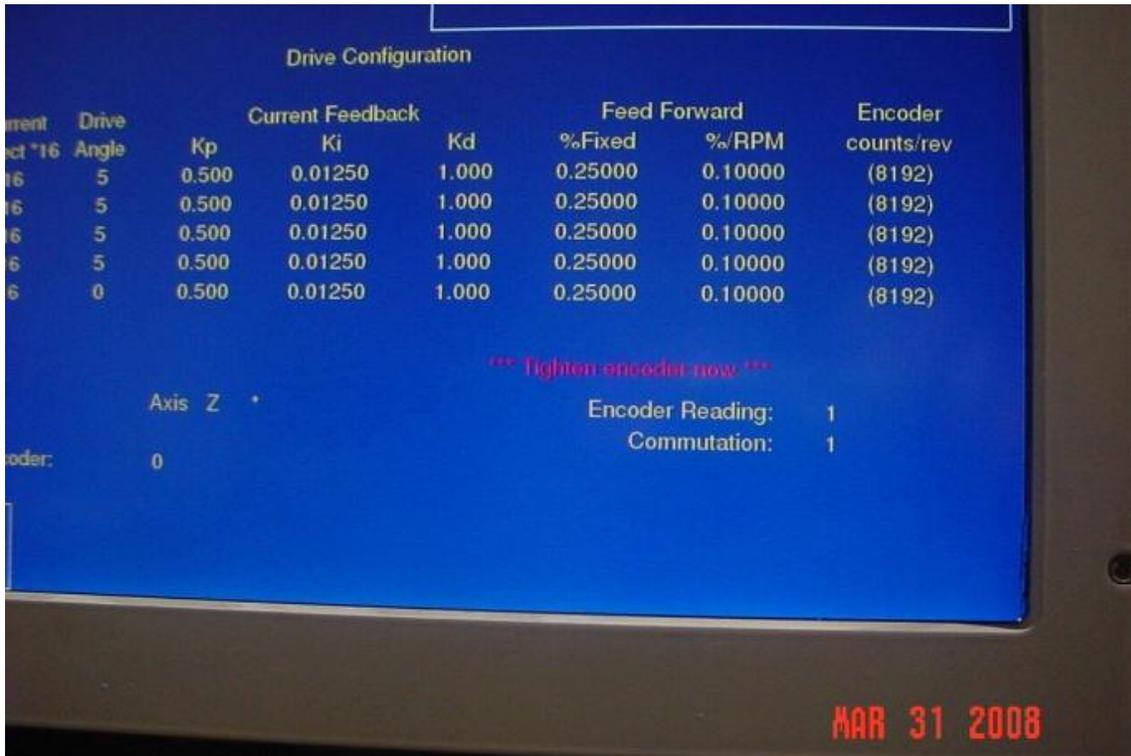
The drive also looks at the commutation lines from the encoder to give it a coarse position of the shaft for smooth movement to the index on power up. These commutation signals are interpreted by the drive as zones 1 through 6. As the motor turns clockwise the encoder counts should increase. This procedure can also be repeated if an axis on a machine is jumping and you suspect the encoder alignment is incorrect.

Procedure:

1. Remove motor from machine, if not already removed.
2. Remove back end cap on the motor.
3. Connect power cable and encoder cable from drive to the motor with drive off.
4. Connect encoder leads to the end cap connector. (If encoder is mounted to the motor, remove encoder)
5. Power control and pull out **E-stop**.
6. Go to the **PID** then to the **Drive menu**. Then **Move sync** several times by pressing **F2** "Move sync" **F1** "Toggle "select X,Y or Z axis, and then **F10** "GO". You should see the shaft rotate. The first rotation may have a jerk to it but after that the shaft should rotate smoothly.



7. Loosen 2 hex screws and 2 screws (pictures)
8. Rotate the encoder shaft until the encoder reading is Zero. Do not rotate the shaft of motor. Rotate the encoder until the encoder reading "Tighten encoder now "



9. Tighten encoder-mounting screws.
10. Hit **Move sync** as many times as needed to return to the zero position and verify the zero reading. Observe the commutation count goes 1 through six consecutively. Adjust and retry if necessary. At a rest position the commutation zone should be either a 1 or a 6 only. If not, reboot the machine and start again.
11. Replace end cap and apply "index set" sticker on motor. This motor is ready for operation AFTER THE SYSTEM HAS BEEN REBOOTED.
12. Install motor on machine.

This procedure must be done every time a new encoder is installed on a Centroid AC Brushless motor. Alignment must always take place off the machine, or damage to machine or person could occur.